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THE 10 LARGEST FEDERAL GRANTS AT UWM

The University of Wisconsin-Milwaukee is one of the nation's top research universities, as recognized by the Carnegie Classification of Institutions of Higher Education. In FY 2020, the university had $62.7 million in awards. Nearly three-quarters of that amount – $45.6 million – came from federal agencies. Here is a look at the 10 largest federal grants that were active last year.

GPS FOR GRAVITATIONAL WAVES

Xavier Siemens & David Kaplan, physics

$14.6 million over five years, National Science Foundation

This funding establishes a multi-institutional research center called the North American Nanohertz Observatory for Gravitational Waves. Scientists follow millisecond pulsars with radio telescopes in an effort to detect low-frequency gravitational waves and learn more about how galaxies are formed and evolve.

GRAVITATIONAL WAVE DATA ANALYSIS

Patrick Brady & Warren Anderson, physics

$7.2 million over four years, National Science Foundation

The Advanced Laser Interferometer Gravitational-Wave Observatory (aLIGO) is an international partnership that first detected gravitational waves in 2015 and is now using them to learn more about the universe. This grant sustains and enhances aLIGO's massive computational data analysis infrastructure.

OCEAN FARMING A BIOFUEL SOURCE

Filipe Alberto, biological sciences

$5.2 million over four years, U.S. Department of Energy

Giant kelp, the fastest growing organism on Earth, could be a valuable biofuel source. UWM researchers are creating a seed bank and using genomic selection to improve traits. This will allow others to not only breed the crop and farm it in the ocean, but also protect it from environmental threats.

ENVIRONMENT AND CHILDREN'S BRAINS

Krista Lisdahl, psychology

$3.8 million over three years, National Institutes of Health

A partner in the largest long-term study of brain development and child health, UWM is tracking biological and behavioral factors in 384 Wisconsin children to identify how environment and biology interact to affect brain development. The children are being followed from ages 9 or 10 through young adulthood.

A BETTER WAY TO WEIGH

Michele Polfuss, nursing

$3.6 million over five years, National Institutes of Health

Children with spina bifida, a developmental disability, have higher rates of obesity than typically developing peers. Inherent characteristics of the diagnosis make it difficult to accurately measure height, identify obesity and monitor trends. This project aims to develop an accurate method of measuring body composition in a clinical setting.

EASING PAIN FOR MANUAL WHEELCHAIR USERS

Brooke Slavens, health sciences

$3.1 million over four years, National Institutes of Health

This research aims to establish clinical guidelines that will alleviate shoulder injury and pain in children and adults who have spinal cord injuries and use manual wheelchairs. Researchers are testing whether early use of a wider variety of propulsive movements can prevent pain.

COSMIC BIG DATA MANAGEMENT

Patrick Brady, physics

$2.8 million over two years, National Science Foundation

This project supports planning for scalable cyber infrastructure to support multimessenger astrophysics, which combines observations of light, gravitational waves and particles to understand some of the most extreme events in the universe. This cyber infrastructure investment will increase new discoveries by allowing quick analysis of large-scale data from all types of astronomical measurements.

INTERPRETING GRAVITATIONAL WAVE SIGNALS

Jolien Creighton, physics

$1.35 million over three years, National Science Foundation

Rapidly identifying and interpreting signals from the global gravitational wave detector network is essential to multimessenger astronomy. UWM scientists are developing data analysis tools to facilitate the online search for signals from collisions of neutron stars and/or black holes as well as a classification system of gravitational wave source events.

BETTER BATTERY PROTECTION

Deyang Qu, engineering

$1 million for one year, U.S. Department of Energy

Boosting energy density in rechargeable lithium-ion batteries is key to broadening their commercial use. One obstacle is the formation of microscopic fibers on the lithium's surface during charging and discharging, which can lead to fires or explosions. UWM researchers are creating a dynamic protection layer that will prevent this.

USING LIGHT AND FORCE TO STUDY PROTEINS

Ionel Popa & Valerica Raicu, physics

$983,000 over three years, National Science Foundation

Researchers will design and construct a tool for three-dimensional study of interactions among proteins performing vital functions inside the body. The tool will use fluorescent tags to examine the mechanical response of proteins working together, which is important for investigating drugs or detecting antibodies.